

REF2014

Unit of Assessment 34

Paul Croft

King's Gardens, Southport



King's Gardens, Southport: Project overview



Summary

The Crick Smith consultancy were commissioned by Sefton Council to undertake architectural paint analysis of the historic buildings and structures situated on the seafront (surrounding the Marine Lake) within King's Gardens, Southport.

The objective of this action-based research and analysis, undertaken by Paul Croft, was to help inform the decision making process for the repair and restoration of these historic structures by providing a picture of their decorative appearance from initial construction to present day.

The Gardens were developed in stages between the early 1880s and the 1930s, and this research provided the opportunity to re-present the structures in an authentic way, acknowledging the rich heritage of the site.

King's Gardens, Southport: Project overview



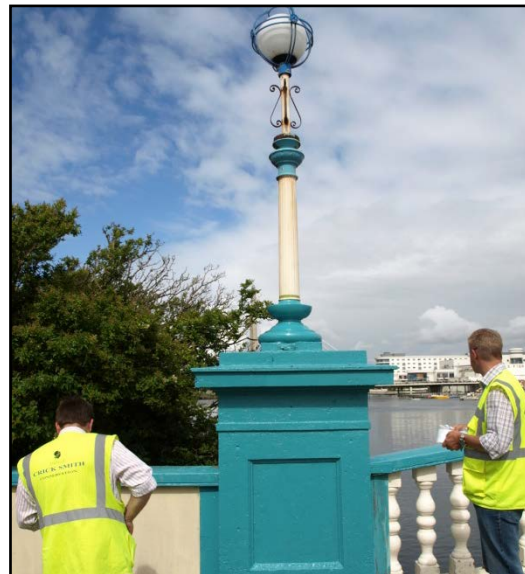
Cast Iron Shelter (1911/12)



The Marine Lake Café



The 'Arts and Crafts' shelter (1911/12)



An iron lamp on the Venetian Bridge

Site analysis

The research examined a variety of structures including:

- 8 cast iron shelters (1911/12)
- The Bowling Club Pavilion (1937)
- The sewage pumping station (1951)
- The 'Arts & Crafts' shelter (1911/12)
- The Marine Lake Café (pre 1902)
- Former Ladies' toilet (pre 1902 and extended in the 1920's)
- The Venetian Bridge (1930)
- The Lakeside post and rail iron fence (1913)
- 12 Edwardian iron balustrade lamp columns (1913)
- 16 Edwardian iron freestanding lamp columns (1913)
- 18 freestanding iron lamp columns (1930)
- 10 balustrade iron lamp columns (1930)
- 30 iron lamp columns on the Venetian Bridge (1930)
- Low railing on former sea wall (nineteenth century).

King's Gardens, Southport: Project overview



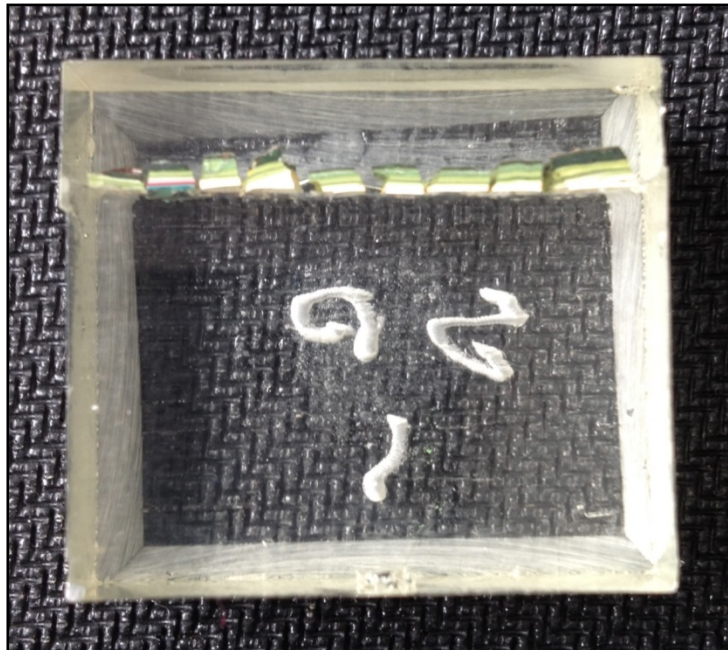
P. Croft and M. Crick Smith take samples from the 'Venetian Bridge'



M. Crick Smith sampling an Edwardian Lamp



P. Croft sampling the main beam of the Bowling Pavilion



9 paint samples mounted in casting resin, ready for microscopic analysis

Sampling

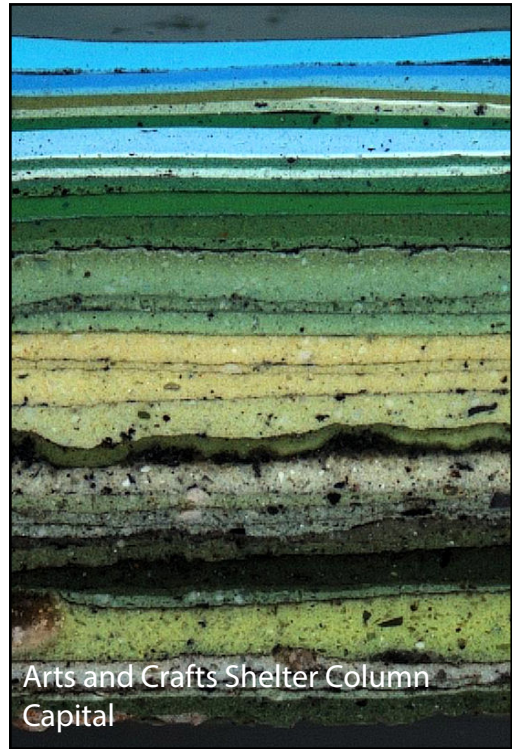
The collaborative research client stipulated the 14 structure types requiring extensive paint sampling resulting in approximately 100 samples.

The sample sites were carefully selected to include those areas with heavy paint build up (i.e. structures that have not been previously stripped) and in locations that were broadly representative of the individual structures. Samples were removed using battery powered dental drills and sharp blades. This ensured a complete sample containing early primer coats and paint schemes. All samples were carefully labelled and bagged individually on-site ready for analysis.

The removed samples were examined under a low powered optical microscope and cut into approximately 3mm sections ready to be mounted in a line and set into clear polyester resin blocks. Great care was taken to ensure the bagged sample labels were accurately transferred to the locations in the resin blocks.

The mounted samples were viewed under a high powered binocular microscope using simulated daylight (to highlight: primer coats, paint colour and dirt layers) and ultra-violet fluorescence (to highlight: paint type (lead, zinc or alkyd) and varnish layers).

King's Gardens, Southport: Project overview

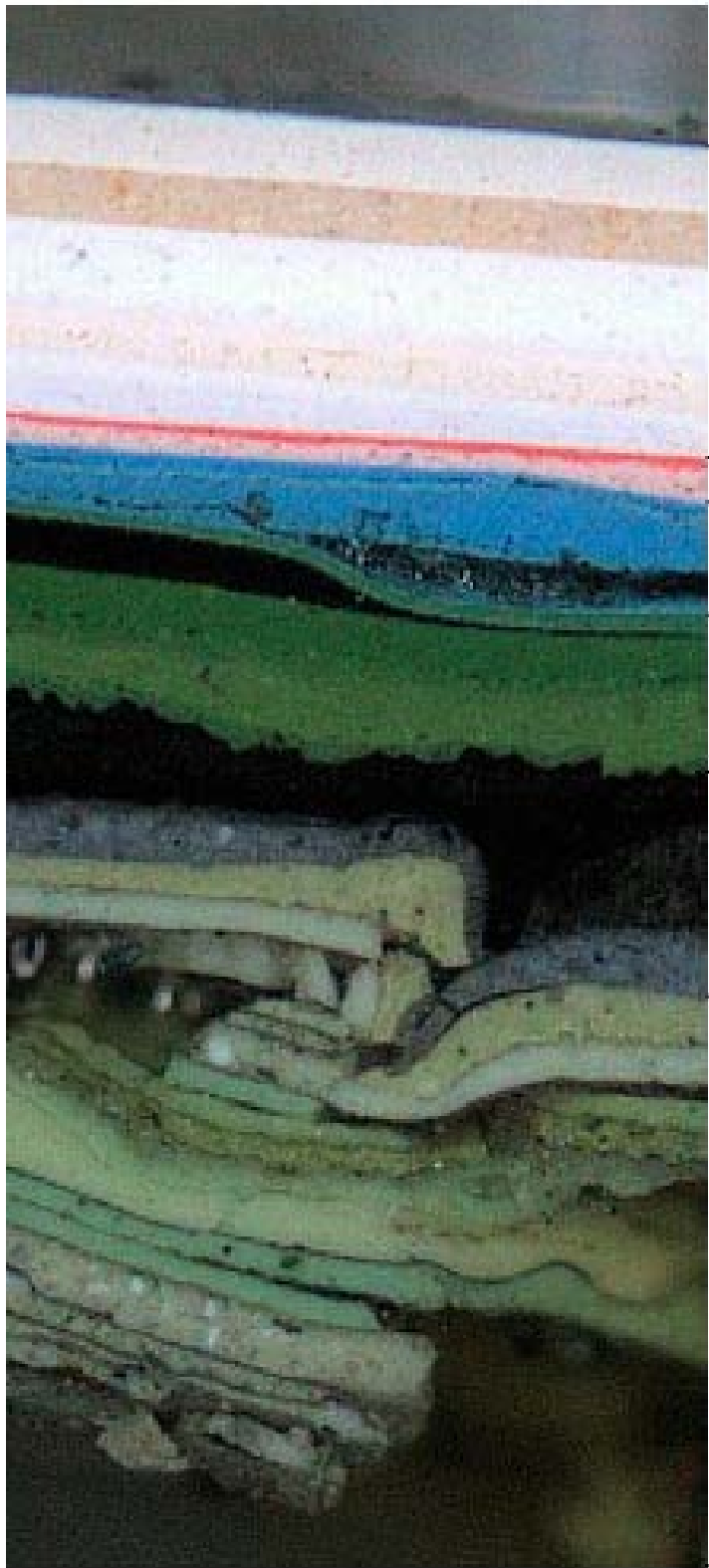


Paint analysis

Many of the samples show evidence of various green paints, layers dating from the early twentieth century to the 1930s. Structures were generally painted dark green with some features picked out in paler greens or cream to provide contrast and enhance architectural details. Such paint schemes were evident at the Marine Lake Café, the post and rail fence, the Ladies' toilet and the Arts & Crafts Shelter.

A notable exception to this green paint scheme was the Venetian Bridge which, although a largely timber construction was clearly intended to be presented as a stone structure, hence its pale stone paint colour scheme.

King's Gardens, Southport: Project overview



Description of Layers (Latest schemes)

- Schemes 20 – 23: white/cream alkyd oil paints
- Scheme 19: mid red alkyd with undercoat
- Schemes 17 & 18: blue & blue/grey alkyd oil paints
- Schemes 14 – 16: mid green lead oil paints
- Scheme 13: grey/black bituminous paint
- Surface cleaned back, but traces of earlier green schemes still evident although confused

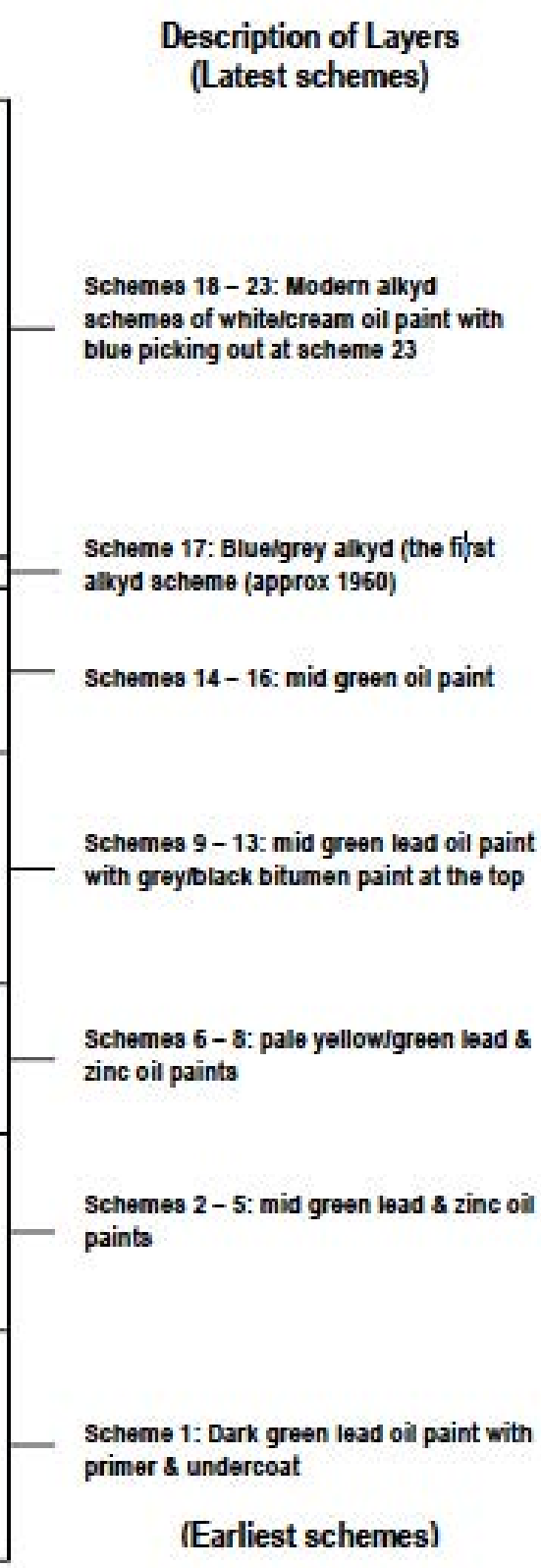
(Earliest schemes)

Paint analysis

The Edwardian lamp columns were stripped soon after the Second World War prior to a new paint scheme being applied. The paint cross section shown was removed from a concealed area and shows fragmented early schemes at the base of the image. This was a key sample which helped to demonstrate the continuity of the earliest paint colours across the site. The darker greens at the base of the image date to the Edwardian period with the subsequent paler greens dating to the 1930's.

*Annotated Paint Sample from Edwardian Lamp Column Shaft
Extract from Crick Smith's King's Garden report (2011)*

King's Gardens, Southport: Project overview



Paint analysis and historical research

This image shows a detail from a colour postcard dated to 1959 with a high level contrast. The 1930's freestanding lamp columns are clearly visible uniformly painted in the blue/grey identified as scheme 17 (the first alkyd oil paint scheme).

Alkyd paints were introduced soon after WW2, when linseed oil and the solvents used were in scarce supply, with the synthetic polymers that replaced the earlier more traditional paint formulations coming into common use by the mid 1950's.

The transition from the use of traditional lead and zinc paints to the use of alkyds has provided a useful datum throughout this research exercise when dating the paint layers.

King’s Gardens, Southport: Project overview

Scheme Chart: Marine Lake Cafe & Lakeside post and rail fence

	Sample 1.2: pale eaves detail, porch brackets, fluting beneath barge boards, end gable inserts	Sample 1.1: dark eaves detail, soffits, railings, barge & fascia boards	Sample 1.5: rainwater goods (gutters & downpipes)	Sample 2.8: stone lintels	Sample 2.3: lakeside post & rail fence
Scheme 29 (Current scheme as seen today)	White alkyd oil paint with undercoat	White alkyd oil paint with undercoat	Blue alkyd oil paint with undercoat	White alkyd oil paint with undercoat	Blue alkyd oil paint with undercoat
Scheme 28					Mid red alkyd oil paint
Scheme 27	Pale cream alkyd oil paint with undercoat	Pale cream alkyd oil paint with undercoat	Mid red alkyd oil paint with undercoat	White alkyd oil paint with undercoat	Mid red alkyd oil paint with undercoat
Scheme 26				The stone lintels remain unpainted until scheme 27	Mid blue alkyd oil paint
Scheme 25	Orange/pink alkyd oil paint with undercoat	Orange/pink alkyd oil paint with undercoat	Orange/pink alkyd oil paint with undercoat		Orange/pink alkyd oil paint with undercoat
Scheme 24	Pale cream alkyd oil paint with undercoat	Pale cream alkyd oil paint with undercoat	Blue alkyd oil paint with undercoat		Blue alkyd oil paint with undercoat
Scheme 23 (approx 1960)	Pale cream alkyd oil paint with undercoat	Pale cream alkyd oil paint with undercoat	Red/brown alkyd oil paint with undercoat & primer		Blue alkyd oil paint with undercoat
Scheme 22	Pale green zinc oil paint with undercoat	Pale green zinc oil paint with undercoat	Pale green zinc oil paint with undercoat		Pale green zinc oil paint with undercoat
Scheme 21	Pale green zinc oil paint	Pale green zinc oil paint	Pale green zinc oil paint		Pale green zinc oil paint
Scheme 20 (first post WW2 scheme)	Mid green lead oil paint with undercoat	Mid green lead oil paint with undercoat	Mid green lead oil paint with undercoat		Mid green lead oil paint with undercoat
Scheme 19 – pre 1939 - 45	Pale yellow/green lead	Pale yellow/green lead	Pale yellow/green lead		Pale yellow/green lead
Scheme 18	Pale yellow/green lead	Pale yellow/green lead	Pale yellow/green lead		Pale yellow/green lead
Scheme 17	Pale yellow/green lead	Pale yellow/green lead	Pale yellow/green lead		Pale yellow/green lead
Scheme 16	Pale yellow/green lead	Pale yellow/green lead	Pale yellow/green lead		Pale yellow/green lead
Scheme 15	Pale yellow/green lead with undercoat	Pale yellow/green lead with undercoat	Pale yellow/green lead with undercoat		Pale yellow/green lead with undercoat
Scheme 14	Pale yellow/green lead	Pale yellow/green lead	Pale yellow/green lead		Pale yellow/green lead
Scheme 13 (approx 1930)	Pale yellow/green zinc oil paint with undercoat & primer	Pale yellow/green zinc oil paint with undercoat & primer	Pale yellow/green zinc oil paint with undercoat & primer		Pale yellow/green zinc oil paint with undercoat & primer
Scheme 12	Pale blue/green zinc oil paint	Mid green lead oil paint	Mid green lead oil paint		Mid green lead oil paint
Scheme 11	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 10	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 9	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 8	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 7	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 6	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 5 (approx 1920)	Pale blue/green lead oil paint	Dark green lead oil paint	Dark green lead oil paint		Dark green lead oil paint
Scheme 4 – pre 1914 - 18	Mid yellow/green with VARNISH layer above	Mid yellow/green with VARNISH layer above	Mid yellow/green with VARNISH layer above		Mid yellow/green with VARNISH layer above
Scheme 3	Yellow/green lead oil paint with undercoat	Yellow/green lead oil paint with undercoat	Dark grey lead oil paint with undercoat		Terracotta lead oil paint with undercoat & primer
Scheme 2	Pale green lead oil paint with undercoat	Pale green lead oil paint with undercoat	Pale green lead oil paint with undercoat		IRON / STEEL
Scheme 1 – pre 1902	Pale cream lead oil paint with undercoat & primer	Dark green lead oil paint with undercoat & primer	Dark green lead oil paint with undercoat		
SUBSTRATE	TIMBER	TIMBER	CAST IRON	STONE	

Collation of paint analysis

The paint analysis collation reveals three distinct phases:

- 1) A nineteenth century scheme of white lead and zinc oil paints. These were uncovered on the oldest structures – the railings on the former sea wall.
- 2) A ‘green phase’ which started in the early twentieth century with all structures being painted dark green with some features picked out in paler greens or cream.
- 3) From the mid 1950s to early 1960s a conscious decision was made to brighten up the appearance of the structures with the introduction of a red and cream scheme and later the blue and white scheme present today.

King's Gardens, Southport: The cast iron structures



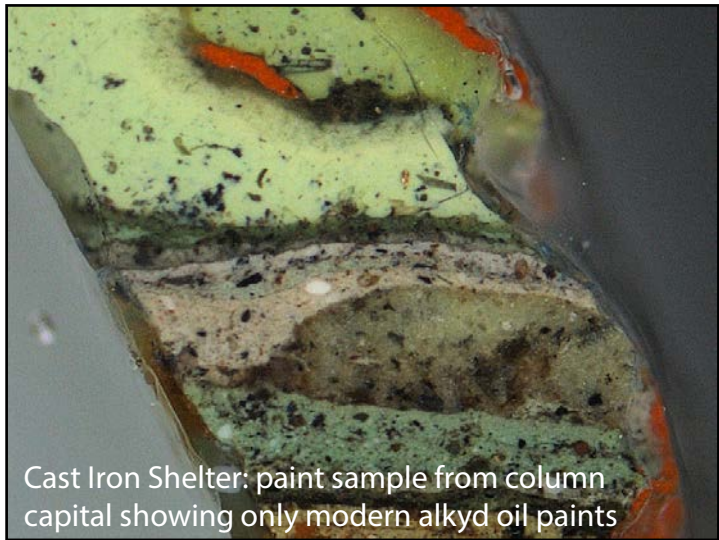
Overview

The eight cast iron shelters were significant to the overall project. They are of historical significance (dated to 1911-2 and Grade 2 listed). These shelters will be central to the visitor experience in the restored gardens.

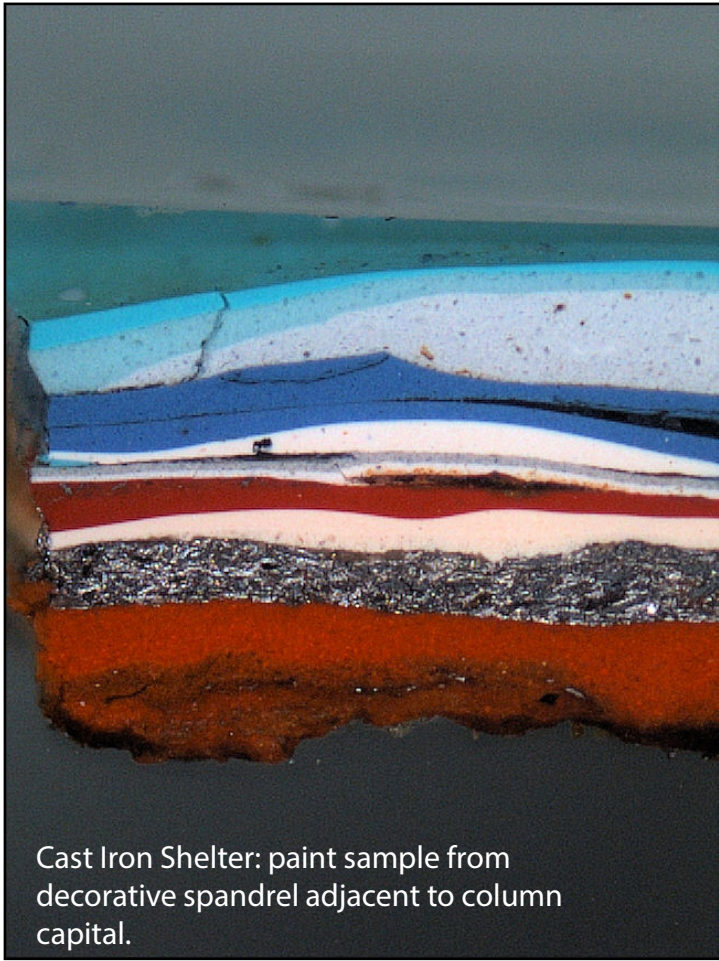
King's Gardens, Southport: The cast iron structures



Sampling diagram: cast iron structures



Cast Iron Shelter: paint sample from column capital showing only modern alkyd oil paints



Cast Iron Shelter: paint sample from decorative spandrel adjacent to column capital.

Sampling and analysis

The Iron Structures were sampled in multiple locations (as indicated on the diagram).

Analysis of the paint samples showed the structures had been aggressively stripped back, meaning the majority of the samples showed only modern alkyd paints.

One decorative spandral sample showed evidence of the 'green scheme' connecting with evidence of this paint scheme from other structures across the site. There was enough evidence now to extrapolate a credible idea of the original decorative scheme.

King's Gardens, Southport: The cast iron structures

KINGS GARDENS, SOUTHPORT

Cast Iron Shelters

Proposed Paint Scheme



Fig 1: Pre 1920
REP: Painted Postcard



Fig 2: Approx: 1620s
RDF: Painted Postcard



Fig 3: Approx 1820
REF: Photograph



Fig. 4: Approx. 1950
RdF: Photograph

These historic images provide additional evidence into the early appearance of the shedders. Initially (Fig. 1) in a uniform dark green oil paint, without the window frames or other features picked out. Then, moving on to the hand tinted colour image (Fig. 2), probably dating to the 1820s, we see the same dark green on the main structure (with a red roof), but now with the windows picked out in a pale colour, probably matching the dark green and pale yellow/green theme selected on the Marine Lake Café cover with this period. The final two images, probably taken in approx 1930 and in 1950, show a continuation of this darker green theme with window frames picked out in a lighter coloured oil paint, either creams or pale greens. In contrast,



Fragment of earlier schemes removed from spindle

This fragment, although out of context does reveal a yellow/green disc of paint at the top with earlier darker greens lower down the sample and is clearly a remnant of the earlier schemes left behind after the surfaces were stripped. Although this evidence is scant it does confirm the shelters were painted in the same green tones as the other structures of the same age, and with the help of the available historic images it is reasonable to extrapolate these colours onto the shelters. The historic images provide an insight to the way in which the colours were defined.



LLOYD EVANS PRICHARD
CHARTERED ARCHITECTS LTD

Recreated scheme

Chartered architects Lloyd Evans Pritchard proposed paint schemes for the cast iron shelters. This scheme was based fully on Croft's research report. The architectural presentation (left) quotes the report's findings verbatim and includes the photomicrograph of the paint samples, indicating the presence of the 'green scheme'.

The restoration work will be completed by March 2014. Sefton Council are planning an official opening around July 2014, which will coincide with the 101st anniversary of the gardens being opened by King George V.